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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SOLANKI, PARIKHA

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/723,859

Applicant(s)

AVINASH ET AL.

Examiner

Parikha Solanki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 15, 25, and 37 of copending Application No. 10/723,716, in view of Riederer et al (US Patent No. 5,363,844). Although the conflicting claims are not identical, they are not patentably distinct from each other because the independent claims 1, 13, 25 and 35 of the instant application recite all the limitations of claims 1, 15, 25 and 37 of the copending application, although the language of the conflicting claims is not identical. Specifically, the instant application recites initiation and termination thresholds, whereas the copending application recites two or more prospective gating points. Initiation and termination thresholds constitute two prospective gating points, and as such the claimed inventions are not patentably distinct. The copending application does not claim performing the method or using the system during a patient breath hold. In the same field of endeavor, Riederer ('844) provides a method and system for minimizing respiratory motion artifact during imaging using patient breath holding (Fig. 1, col. 5 lines 31-53, col. 6 line 29-36). At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the method and system of the copending application to include the step of breath holding in order to further

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minimize respiratory motion artifact during image acquisition, in view of the teaching of Riederer ('844).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 1-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 5 and 7 of copending Application No. 10/723,894, in view of Riederer et al (US Patent No. 5,363,844). Although the conflicting claims are not identical, they are not patentably distinct from each other because the independent claims 1, 13, 25 and 35 of the instant application recite all the limitations of claims 1, 3, 5 and 7 of the copending application, although the language of the conflicting claims is not identical. Specifically, the instant application recites initiation and termination thresholds, whereas the copending application recites two or more retrospective gating points. Initiation and termination thresholds constitute two retrospective gating points, and as such the claimed inventions are not patentably distinct. The copending application does not claim performing the method or using the system during a patient breath hold. In the same field of endeavor, Riederer ('844) provides a method and system for minimizing respiratory motion artifact during imaging using patient breath holding (Fig. 1, col. 5 lines 31-53, col. 6 line 29-36). At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the method and system of the copending application to include the step of breath holding in order to further minimize respiratory motion artifact during image acquisition, in view of the teaching of Riederer ('844).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

4. Claims 2 and 15 are objected to because of the following informalities: in line 3 of both claims, the second recitation of "a pressure" is redundant. Examiner recommends that this phrase be removed from the claim. Appropriate correction is required.

Additionally, claim 15 is objected to because it contains a typographical error. In line 4 of claim 5, the word "increase" should be replaced with "increases." Appropriate correction is required.

5. Claims 9 and 21 are objected to because they recite a limitation without proper antecedent basis. Both claims recite "the one or more suggested gating intervals." The

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independent claims from which claims 9 and 21 depend recite "gating intervals," but they do not recite the word "suggested." In view of the supporting specification, Examiner assumes that Applicant intended for the gating intervals in claims 9 and 21 to be the same gating intervals recited in claims 9 and 13, and Examiner will continue to examine the claims under this assumption for the remainder of this Office Action. Examiner suggests that Applicant remove the word "suggested" from claims 9 and 21. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-12 recite "a method for gating image data," with steps for acquiring and processing image data. These steps provide no useful, concrete or tangible result. As set forth in the USPTO Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, published on 26 October 2005, a method without a tangible, useful and concrete result is considered non-statutory subject matter. Examiner hereby directs Applicant's attention to pages 19-22 of these Guidelines for further explanation of what constitutes a tangible, useful and concrete result.

Examiner suggests that Applicant modify claims 1-12 to add one or more steps that will render the result of the claimed method tangible, useful and concrete. For example, a step for treating a patient based on the information derived from the method would be considered useful, concrete and tangible, although in regards to the instant application, Applicant must consider whether such a step would constitute new matter in light of the existing disclosure before amending the claims accordingly. Examiner also respectfully reminds Applicant that the mere step of diagnosing disease based on image data will not remedy the statutory deficiencies of these claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-8, 10-20, 22-33 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Riederer et al (US Patent No. 5,363,844), hereinafter referred to as Riederer ('844).

Regarding claims 1-4 and 13-16, Riederer ('844) discloses a method and program including the steps of acquiring a set of motion data during a breath hold, deriving an attribute of motion from the set of motion data, deriving an initiation threshold and termination threshold from the attribute, and generating a set of gated image data using gating intervals derived from the thresholds (col. 5 lines 31-53, col. 6 line 29-36). Riederer ('844) discloses that the set of motion data is acquired from a navigator pulse sequence, which is the same as a acquiring a set of pre-acquisition image data as claimed in the instant application (col. 5 lines 5-58). Riederer ('844) discloses that the displacement of the diaphragm may be detected via the NMR system, which constitutes an electrical sensor, and respiratory bellows, which constitute non-electrical sensors (col. 2 lines 14-15, col. 5 lines 34-37, col. 7 lines 2-6).

Regarding claims 5-8 and 17-20, Riederer ('844) shows that the image data is acquired when a first measurement of motion decreases below an initiation threshold, and acquisition ceases when motion increases above a termination threshold, wherein the beginning and end of the breath hold disclosed by Riederer ('844) constitute the initiation and termination thresholds, respectively, as claimed in the instant application (Fig. 3). Furthermore, the duration of the breath hold disclosed by Riederer ('844) constitutes a quiet period as claimed in the instant application. Riederer ('844) also discloses that the motion measurements are acquired concurrently with the image data (col. 5 lines 37-36).

Regarding claims 10-11 and 22-23, Riederer ('844) states that a respiration monitor is used to detect an acceptable breath-hold, and to generate the respiratory trigger pulse, which is the same as determining if a scan parameter is satisfied and acquiring image data based on the scan parameter as claimed in the instant application (col. 5 lines 48-54). In the method of Riederer ('844), the absence of the respiratory trigger pulse when the breath-hold is not acceptable is the same as a notification as claimed in the instant application.

Regarding claims 12 and 24, Riederer ('844) discloses a step and routine for providing a visual notification to the patient indicating breath hold status (col. 6 lines 54-66).

Regarding claims 25-29 and 35, Riederer ('844) discloses an imaging system and computer programs for performing the method of claims 1-12 of the instant application, wherein the system comprising an imager configured to generate a plurality of signals representative of

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the diaphragm and heart, data acquisition circuitry, data processing circuitry, system control circuitry for generating a set of gated image data, an operator workstation, a sensor-based motion determination system to measure electrical and non-electrical attributes of one or more organs, wherein the sensor-based motion determination system employs respiratory bellows, which constitute pressure sensors (Fig. 1, col. 7 lines 2-6, col. 3 line 4 – col. 5 line 30).

Regarding claim 30, Riederer ('844) provides means for generating gated image data by activating the imager based upon a gating interval (col. 2 lines 11-13).

Regarding claim 31, Riederer ('844) discloses means for generating gated image data by registration, which constitutes selectively processing a plurality of signals based upon gating intervals (col. 2 lines 38-41).

Regarding claims 32 and 33, the system of Riederer ('844) includes a color-coded visual feedback device configured to notify the patient of a breath hold status based upon data from a sensor-based motion determination system (col. 6 lines 54-66).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riederer (US Patent No. 5,363,844). Riederer ('844) teaches all features of the present invention as previously described in this Office Action. While Riederer ('844) teaches displaying the motion data and determining if the gating intervals are acceptable, Riederer ('844) does not explicitly teach the step of replacing the thresholds or gating intervals if they are determined to be unacceptable (col. 5 lines 48-50). However, it would have been obvious to one of ordinary skill in the art at the time of invention to add this step to the method of Riederer ('844), as it is well known in the art that image data acquired during an unacceptable gating interval is not accurate or useful.

12. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riederer ('844) in view of Sontag et al (US Patent No. 6,298,260), hereinafter referred to as Sontag ('260).

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Riederer ('844) teaches all features of the invention of claim 32 of the instant application as detailed above. Riederer ('844) does not teach an audible notification device configured to play at least one of one or more tones and one or more audible messages for providing feedback to the patient during breath holding. In the same problem-solving area, Sontag ('260) teaches a method and apparatus for respiration responsive gating means, including means for transmitting an audible cue to instruct the patient to hold his breath (col. 8 line 66 – col. 9 line 6). At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the system of Riederer ('844) to include an auditory cue to instruct the patient to begin a breath-hold, in order to provide a more effective cue means for patients who are unable to respond to visual indicators, in view of the teachings of Sontag ('260).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In the same field of endeavor, Du (US Patent No. 6,144,874), Yanof et al (US PG Pubs. No. 2003/0188757) and Wang et al (US Patent No. 6,791,323) teach related methods and systems for respiratory gating and motion artifact correction during imaging.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parikha Solanki whose telephone number is 571.272.3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Parikha Solanki

Examiner – Art Unit 3737



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